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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/610,217	07/05/2000	Shunpei Yamazaki	SEL 192	4725

7590 08/22/2002  
Cook Alex McFarron Manzo Cummings & Mehler Ltd  
200 West Adams Street  
Suite 2850  
Chicago, IL 60606

EXAMINER

BOOTH, RICHARD A

ART UNIT PAPER NUMBER

2812

DATE MAILED: 08/22/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/810,217

Applicant(s)

YAMAZAKI ET AL.

Examiner

Richard A. Booth

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) 1-28 and 34-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of the second species in Paper No. 12 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 29-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In all of the claims of record, the use of the phrase "island-like" renders the claims indefinite because the addition of a word such as type or like to an otherwise definite expression renders the term indefinite.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtani et al., U.S. Patent 5,643,826 in view of Fukuda et al., U.S. Patent 6,096,585.

Ohtani shows the invention substantially as claimed including a pixel TFT disposed in a pixel unit comprising the steps of: forming an underlying film 202 over the substrate 201; forming an island-like semiconductor film 208 over said underlying film; forming n-type source and drain regions (212,213) for said pixel TFT; forming a protective insulating film 211 or 214 formed of an inorganic insulating material above the pixel TFT; forming an inter-layer insulation film 215 formed of an organic insulating material in close contact with said protective insulating film; and forming on said inter-layer insulating film a pixel electrode 216 having a light reflective surface and connected to said pixel TFT (see figs. 10A-10F and col. 11-line 64 to col. 13-line 55).

Ohtani lacks anticipation of forming both peripheral and pixel TFTs (although this is alluded to at col. 1-lines 13-19) using the steps of: forming n type impurity regions having a first concentration, for forming LDD regions of said n channel type TFT of said driving circuit and said pixel TFT in selected regions of said island-like semiconductor layers; forming n type impurity regions having a second concentration, for forming source regions or drain regions outside said n type impurity regions having the first concentration; and forming a p type impurity region having a third concentration, for forming a source region or a drain region of said p channel TFT of said driving circuit in a selected region of said island-like semiconductor layers.

Fukuda et al. discloses forming both peripheral and pixel TFTs with island-like semiconductor films 72 by forming n-type impurity regions having a first concentration (see fig. 7B), for forming LDD regions of said n channel type TFT of said n channel type TFT of said driving circuit and said pixel TFT in selected regions of said island-like semiconductor layer, forming n type impurity having a second concentration (see Fig. 7G) for forming source or drain regions (91c, 72c, for example) outside said n-type regions having the first concentration; and forming a p type impurity region (see Fig. 7C) having a third concentration, for forming a source region or a drain region of said p channel TFT of said driving circuit in a selected region of said island-like semiconductor layer (see Figs. 7A-7H and col. 7-lines 5-51). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the reference of Ohtani with the peripheral and pixel formation disclosed by Fukuda et al. because this provides a beneficial structure for both the pixel and driving portions while reducing the number of processing steps.

With respect to claim 31, note that the gate electrode material 211 in Ohtani et al. is aluminum which is both heat resistant and of low conductivity as defined by these broad terms. Regarding claim 33, note that Ohtani et al. suggests the use of the invention in active matrix liquid crystal displays which are commonly used in portable computers.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtani et al., U.S. Patent 5,643,826 in view of Fukuda et al., U.S. Patent 6,096,585 as applied

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to claims 29, 31, and 33 above, and further in view of Zhang et al., U.S. Patent 5,403,772.

Both Ohtani et al. and Fukuda et al. are applied as above but fail to expressly disclose where the p-type region formation is conducted after the protective film is formed so that a p type region is formed in an offset form.

Zhang et al. discloses forming a p-type transistor with an offset due to the presence of the protective film on the gates which is an anodic oxide film (see figs. 10A-10C and col. 19-line 1 – col. 20-line 8). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the primary reference of Ohtani et al. so as to implant after formation of the anodic oxide protection film because this will reduce any implant damage to the gate electrode.

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtani et al., U.S. Patent 5,643,826 in view of Fukuda et al., U.S. Patent 6,096,585 as applied to claims 29, 31, and 33 above, and further in view of Yamamoto et al., U.S. Patent 5,672,523.

Ohtani et al. and Fukuda et al. are applied as above but fail to expressly disclose the gate electrode formed of a heat resistant material specifically tantalum. Yamamoto et al. discloses making the gate electrode and gate bus lines of different materials, for example, the gate of tantalum and the bus lines of aluminum (see abstract). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the reference of Ohtani et al. so as to form the gate of

tantalum as taught by Yamamoto et al. because tantalum forms a better anodic oxide and is a better gate material than previously used materials (see col. 2-lines 1-62).

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A. Booth whose telephone number is 308-3446. The examiner can normally be reached on Monday-Thursday from 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are 308-7724 for regular communications and 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-1782.

A handwritten signature in black ink, appearing to be 'R. Booth', with a stylized flourish at the end.

Richard A. Booth  
Primary Examiner  
Art Unit 2812